

Summary of Petrified Forest NP GRI meeting June 27-28th, 2001

Summary

A geologic resources inventory workshop was held for Petrified Forest NP (PEFO) on June 27th and 28th, 2001 to view and discuss the park's geologic resources, to address the status of geologic mapping for compiling both paper and digital maps, and to assess resource management issues and needs. Cooperators from the NPS Geologic Resources Division (GRD), NPS Petrified Forest NP, Colorado State University, University of Montana and United States Geologic Survey (GS) were present for the workshop. This was part of a multi-park scoping session also involving Pipe Spring NM, Navajo NM, Sunset Crater NM, Wupatki NM, and Walnut Canyon NM.

On Wednesday June 27th, scoping involved a full-day field trip to view the geology of the Petrified Forest NP, led by George Billingsley (USGS), Sid Ash, and PEFO staff (Karen Beppler, Bill Parker and Sue Clements). On June 28th another half-day scoping session was conducted to present overviews of the NPS Inventory and Monitoring (I&M) program, the Geologic Resources Division, and the on-going Geologic Resources Inventory (GRI). Round table discussions involving geologic issues for Petrified Forest NP included interpretation, the on-going paleontological inventory, natural resources, the status of geologic mapping efforts, sources of available data, geologic hazards, and action items generated from this meeting.

Currently, the greatest issue facing park resource management is dealing with the threat of resource theft, as tons of petrified wood are stolen from the park on a yearly basis. Because of this, it is desired to refine and increase the scale of existing geologic maps of the area from 1:48,000 scale to larger 1:24,000 scale as it would aid in defining areas at highest risk to resource theft. Also it is likely that PEFO will undergo expansion in the near future, so the present boundaries will become outdated, and the park may double in size, so this should be considered as well in any new mapping initiatives.

For a list of meeting attendees, see **Appendix A (*List of Attendees for Geological Resources Inventory Workshop, June 25-29, 2001*)**

Geologic Mapping

George Billingsley (USGS-Flagstaff, AZ) mapped the PEFO area in the 1970s at a 1:48,000 scale. The map was never officially published as a USGS publication and is not up to their standards, needs some refinement in terms of map unit descriptions, and needs to be on a more stable base. However, it did contain a stratigraphic correlation chart that can be useful. It serves as an excellent base for future, refined, larger scale mapping. George cautioned that it will likely be difficult to match his map against existing 7.5 minute quadrangle sheets because his base map was much different.

Currently, PEFO has 42 quadrangles of interest, though only the following are currently within PEFO proper boundaries or considered expansion boundaries:

- Pilot Rock
- Chinde Mesa

Summary of Petrified Forest NP GRI meeting June 27-28th, 2001

- North Mill Well
- Little Lithodrendon Wash
- Kachina Point
- Pinta
- Adamana
- Sorrel Horse Mesa
- Padilla Tank
- Agate House
- Carrizo Butte
- Ninemile Seep
- Milky Ranch

PEFO natural resource management staff have submitted PMIS proposal number 36582 entitled "*Conduct Geologic Survey and Publish Geologic Map to Enhance Research and Resource Protection*" as an attempt to produce a geologic map for PEFO. Unfortunately, the proposal has not been funded yet to date.

Since the project is not a top priority for the USGS either, it is likely that if the mapping is to be completed, it should either be subcontracted or contracted through a university under the EDMAP program.

Sue Clements, through her work as a volunteer geologist-in-the-park at PEFO and her graduate studies at the University of Montana, is also interested in doing the large scale mapping for the park. It was agreed that she is the most likely person to be able to complete this geologic mapping for PEFO because of her experience in the area and her interest in seeing the project completed.

In another scenario this could be completed at Northern Arizona University, and this should be pursued with the NAU Geology Department. Ron Blakey (Northern Arizona University-Geology Department) is another source to consider for help if an EDMAP route is pursued.

A scale of 1:24,000 is considered the minimum acceptable scale for any new mapping of the area for its applicability to resource management. Also, any new mapping should incorporate a large buffer zone around the park because of the very realistic potential for park expansion in the future.

Digital Geologic Map coverage

At present, a digital coverage of the Billingsley map exists and has been obtained by GRI staff. However, there is no metadata to accompany it. Nicole Tancreto thought it may have been digitized at the University of Arizona; this needs some follow-up from GRI staff.

It would need some additional work to modify it to fit in the NPS Digital Geologic map standard, including complete map unit descriptions for help files. This shouldn't be too

Summary of Petrified Forest NP GRI meeting June 27-28th, 2001

difficult to accomplish if a manuscript containing the stratigraphic correlations and map unit descriptions can be found.

If the mapping for PEFO is completed at the larger scale, it would also be digitized as per the NPS Digital Geologic Map model as demonstrated during the scoping sessions.

Other desired GIS data

Since PEFO does not have a full-time dedicated GIS person at the park, they are dependent on the Intermountain Region GIS staff in Albuquerque for support. They have been receiving assistance to date from April Molina and had been receiving support from Nicole Tancreto in Flagstaff.

It was suggested that the park acquire all available aerial photography to aid in any new mapping. This photography may or may not already exist. It was suggested to contact Mike Story with the NPS Vegetation mapping program to see if he has already acquired any of this data.

Miscellaneous Items of interest

- PEFO would like to hire a full-time paleontologist/geologist to add to their permanent staff. It was suggested that mapping the park would be a wonderful first project. Currently Bill Parker and Sue Clements are temporarily working in this capacity and are working on PEFO's GPRA goal of inventorying their paleontological resources. Karen Beppler initiated the paleontological inventory for the GPRA goal as well as for NEPA compliance.
- Bill Parker's paleontological inventory involves capturing location data in a GIS and using photo documentation to monitor each site as part of the GPRA goal. This will involve revisiting each location for monitoring in 2-, 5-, and 10-years to attempt to collect data and new specimens. This work is showing areas most likely to contain important paleontological resources as well as developing a good point geologic map, as at each sample location he is denoting each formation and member. This data can be overlaid and compared with the existing digital geologic map of Billingsley and discrepancies in unit descriptions can be noted and resolved.
- Current natural resource staff at Petrified Forest NP are Karen Beppler, Sue Clements, and Bill Parker
- Scott Graham (USGS-Flagstaff) is a paleontologist also interested in mapping in the PEFO area, and was interested in offering assistance to the park if they desired.
- There are numerous problems with bentonitic soils at PEFO. One such example is at the Painted Desert Inn where the building foundation is sliding and becoming unstable. Blue Mesa Trail needs geotechnical surveys conducted as well because of bentonite problems.

Summary of Petrified Forest NP GRI meeting June 27-28th, 2001

- Historic buildings in the south end of the park are not as susceptible to bentonite problems because they are built on fill and sandstone material.

Appendix A: List of Attendees for Geological Resources Inventory Workshop

June 25-29, 2001

NAME	AFFILIATION	PHONE	E-MAIL	Navajo 6-25	Grand Canyon 6-26	Petrified Forest 6-27	Flagstaff 6-28	Wupatki- Sunset Crater 6-29
John Graham	Colorado State University	970-225-6333	Jpgraham250@msn.com	X	X	X	X	X
Tim Connors	NPS, GRD	303-969-2093	Tim_connors@nps.gov	X	X	X	X	X
Sherrie Landon	NAVA	307-755-1336	Slandon@uwyo.edu	X	X			
Brenton White	NPS, NAVA	520-672-2720	Brenton.White@nps.gov	X				
Kevin Harper	NPS, NAVA Archeologist	520-672-2720	Kevin_harper@nps.gov	X				
James Charles	NPS, NAVA Superintendent	928-672-2700	James_charles@nps.gov	X			X	
George Billingsley	USGS	928-556-7198	Gbillingsley@usgs.gov		X	X	X	
Della Snyder	NPS, GRCA	928-226-0163	Della_snyder@nps.gov		X			
Allyson Mathis	NPS, GRCA Interpretation	520-638-7955	Allyson_mathis@nps.gov		X			
Debra Block	USGS	928-556-7138	Dblock@usgs.gov		X			
Jessica Wellmeyer	USGS	928-556-7267	Jwellmeyer@hotmail.com		X			
John Rihs	NPS, GRCA Hydrologist	520-638-7905	John_rihs@nps.gov		X			
Scott Graham	USGS	928-556-7270	Sgraham@usgs.gov		X		X	
Tracey Felger	NPS, GRCA GIS	520-556-7164	Tracey_felger@nps.gov		X		X	
Bill Parker	PEFO Paleontologist		William_parker@nps.gov			X	X	
Karen Beppler	NPS, PEFO	928-624-6228, ext. 263	Karen_beppler@nps.gov			X	X	
Sid Ash	PEFO	505-856-5852	Sidash@aol.com			X	X	
Sue Clements	NPS, PEFO		Tecumseh@selway.umn.edu			X	X	
Sarah Hanson	SUCR GIP	520-526-0502 517-264-3944	Slhanson@adrian.edu				X	X
Dave Sharrow	NPS, PISP	435-644-4318	Dave_sharrow@nps.gov				X	
Helen Fairley	NPS, Flagstaff Area	928-526-1157	Helen_fairley@nps.gov				X	X
Michael Ort	Northern Arizona University	928-523-9363	Michael.ort@nau.edu				X	
Nicole Tancreto	NPS, Flagstaff	928-556-7466, ext. 240	Nicole_tancreto@nps.gov				X	
Paul Whitefield	NPS, Flagstaff area parks	928-526-1157	Paul_whitefield@nps.gov				X	X
Ron Hiebert	NPS, NAU-CESU	520-523-0877	Ron.hiebert@nau.edu				X	
Todd Metzger	NPS, Flagstaff		Todd_metzger@nps.gov				X	